



## Assessing the impact of mid-to-late Holocene ENSO-driven climate change on toxic *Macrozamia* seed use: A 5000 year record from eastern Australia

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### Abstract:

Palaeoenvironmental and palaeoclimatic data indicate that during the mid-to-late Holocene eastern Australia became significantly drier and experienced more intense and more frequent droughts. These changes, driven by the re-emergence and intensification of the ENSO climate phenomena, have been argued to have had considerable impact on Aboriginal societies, although there is uncertainty as to the exact nature, timing and magnitude of this impact. This paper analyses changes in the utilisation of toxic *Macrozamia* (cycad) seeds at seven archaeological sites in eastern Australia, identifying an extremely close correlation between the intensity of seed use and two proxy ENSO datasets, and a weaker correlation with a third ENSO dataset. Given the ecological attributes and resource potential of these plants, it is argued that these correlations are best explained as an intensified exploitation of a lower-ranked resource in direct response to the increased subsistence risks and lower productivity created by ENSO-driven climatic conditions. It also suggests that by 3000 BP the intensification of the ENSO system was driving changes in human subsistence behaviour on a sufficient scale to have considerable impact on other aspects of the wider cultural systems.

**Source:** <http://dx.doi.org/10.1016/j.jas.2012.06.005>

### Resource Description

#### Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event, Food/Water Security

**Extreme Weather Event:** Drought

**Food/Water Security:** Agricultural Productivity

#### Geographic Feature:

resource focuses on specific type of geography

Other Geographical Feature

**Other Geographical Feature :** Caves

#### Geographic Location:

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resource focuses on specific location

Non-United States

**Non-United States:** Australasia

**Health Impact:** 

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

**Mitigation/Adaptation:** 

mitigation or adaptation strategy is a focus of resource

Mitigation

**Resource Type:** 

format or standard characteristic of resource

Research Article

**Resilience:** 

capacity of an individual, community, or institution to dynamically and effectively respond or adapt to shifting climate impact circumstances while continuing to function

A focus of content

**Timescale:** 

time period studied

Time Scale Unspecified

**Vulnerability/Impact Assessment:** 

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content